Backyard Politics, National Policies: Understanding the Opportunity Costs of National Fracking Bans

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Some local communities in the United States, particularly in the Northeast, are scrambling to oppose natural gas production enabled by hydraulic fracturing (or fracing, fracking, or hydrofracking) in shale formations. Local opposition to the impacts of fracking is understandable, but recent proposals for national bans ignore a key, more potent threat. Due to a mismatch between the benefits and costs of fracking, on the one hand, and the distribution of political and legal influence, on the other, the voices of those opposed to extraction may drown out the more distant voices of those suffering from the widespread future effects of coal—the primary fossil alternative to gas. Energy policy processes must recognize the opportunity costs of banning gas, including the consequences of continuing to rely on coal as our primary electricity source. The negative environmental impacts of natural gas extraction must be addressed, and our focus on gas ought not to divert attention from the need to develop more sustainable energy alternatives. However, policymakers should not adopt the myopic view advocated by some anti-fracking activists. Rather, policymakers should formulate energy policies that fully weigh the costs and benefits of alternative courses of action and consider the interests of those under-represented in the policy process.

Introduction

The policy debate over hydraulic fracturing (or "fracking") in the Northeastern states overlying the Marcellus Shale has generated much more heat than light. It is the mirror image of the climate change debate, during which opponents of climate change turned a blind eye to climate science and the empirical evidence supporting the notion that human activity is driving global warming. Now, opponents of fracking are turning a blind eye to the opportunity costs—that is, the relative environmental and health risks—of limiting shale gas production in the United States.

States are right to demand proof that fracking will occur safely before permitting thousands of new wells; as the scale of drilling and fracking expands, regulations must protect against spillscontamination, and other

impacts.[1] This Essay argues, however, that the fracking debate problematically ignores the fact that decisions to ban natural gas development at a broad level—national bans, for example—inure mostly to the benefit of coal-fired power, a far dirtier (and deadlier) resource than gas.[2]

As is often the case in energy policy, there is a mismatch between the distribution of the costs and benefits of fracking, on the one hand, and the distribution of political influence (votes), on the other.[3] Communities that experience disproportionate burdens of natural gas development—such as noise, odors, surface contamination, and heavy road traffic[4]—may logically choose to ban fracking, if the community decides that the local costs outweigh local benefits (such as jobs). Some of the benefits of shale gas production (like reducing coal emissions), in contrast, are remote and highly dispersed; decades from now, far fewer citizens will die early deaths from inhaling fine particulate matter, for example. These potential voters, lobbyists, or litigants will not incur their damages until later, and so cannot participate in political and legal processes now; their absence distorts the policymaking process.

Fracking decisionmakers must recognize not just the economic benefits of natural gas, but also the environmental benefits—namely, the immediate displacement of coal and its long-term climate and air quality impacts—while also addressing the concerns of those who bear the brunt of gas extraction burdens. The answer is not to ban fracking or unreasonably delay it; it is to ensure that fracking is conducted in as safe a manner as possible while simultaneously working toward ever-cleaner energy solutions.[5]

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1. *See, e.g.*, *Department of the Interior, Environment, and Related Agencies Appropriations for Fiscal Year 2013: Hearing Before the S. Appropriations Comm.*, 112th Cong. 6 (2012) (statement of Lisa P. Jackson, Administrator, Environmental Protection Agency) ("[W]e must make sure that the ways we extract [gas] . . . do not risk the safety of public water supplies.").

2. Of course, decisions about which fuels we will use to generate electricity are made mainly by private sector actors, based upon cost considerations. As shale gas production drives down the costs of natural gas in the United States, that cost decrease has fueled the displacement of coal-fired plants by gas-fired plants.

3. For a longer discussion of competing interests in fracking, see David Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PENN. L. REV. 431 (2012).

4. *See, e.g.*, SOCIETY OF PETROLEUM ENGINEERS, WHITE PAPER ON SPE SUMMIT ON HYDRAULIC FRACTURING, HYDRAULIC FRACTURING 1, 5, 6 (2011) (describing traffic, noise, and other problems).

5. *See* Thomas Friedman, Op-Ed., *Get It Right on Gas*, N.Y. TIMES, Aug. 5, 2012, http://www.nytimes.com/2012/08/05/opinion/sunday/friedman-get-it-right-on-gas.html (quoting Faith Birol, Chief Economist, International Energy Agency). ("'[A] golden age for gas is not necessarily a golden age for the climate'—if natural gas ends up sinking renewables.").

I. The Controversy

Fracking involves the injection of water, sand, and chemicals deep into shale formations to fracture rock, thereby freeing formerly inaccessible natural gas. Fracking has transformed American energy markets, creating an ample domestic supply of gas and driving domestic natural gas prices to record lows. Some people support shale gas production in their communities, because it brings economic benefits (e.g., royalty payments to landowners, jobs, and local taxes).[6] At the same time, fracking has generated intense local opposition in some places, particularly in the northeastern United States, where critics worry about the impacts of fracking on drinking water and air quality, among other things.[7]

That opposition has split local communities and provoked litigation and conflict over proposed bans and regulatory standards at the state and federal level. Several New York courts have allowed local bans on fracking despite a state preemption provision.[8] Pennsylvania towns persuaded the Commonwealth Court to reverse that state's requirement that municipalities allow fracking in all zones,[9] in a decision now on appeal with the Pennsylvania Supreme Court.

This increasingly disputed process of shale gas development has important environmental impacts, and the magnitude of the risks cannot currently be quantified.[10] Indeed, the shale gas boom increases certain long-known development risks simply by enabling more gas wells to be drilled and "fracked"; the sheer expansion in scale can increase the cumulative effects of minor events such as spills,[11] as with any industrial activity. But from the initial data, gas development enabled by fracking does not appear to justify a national ban.[12] Indeed, from the studies of fracking undertaken to date,[13] and

6. *See, e.g.*, N.Y. ST. DEP'T OF ENVTL. CONSERVATION, REVISED DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS, AND SOLUTION MINING PROGRAM, at ES-17 (2011), http://www.dec.ny.gov/data/dmn/rdsgeisfull0911.pdf (estimating positive economic impacts).

7. *See, e.g.*, Joseph De Avila, *Battle Over Fracking Goes Local*, WALL ST. J. (Aug. 29, 2012), http://online.wsj.com/article/SB10000872396390444327204577617793552508470.html (describing approximately 100 municipal moratoria on fracking and 35 bans in New York alone).

8. Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.Y.S.2d 722 (N.Y. Sup. Ct.. 2012); Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458 (N.Y. Sup. Ct. 2011); Weiden Lake Prop. Owners Ass'n v. Klansky, 936 N.Y.S.2d 62 (N.Y. Sup. Ct. 2011).

9. Robinson Twp. v. Commonwealth, 52 A.3d 463 (Pa. Comnw. Ct. 2012).

10. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-732, OIL AND GAS: INFORMATION ON SHALE RESOURCES, DEVELOPMENT, AND ENVIRONMENTAL AND PUBLIC HEALTH RISKS 4 (2012), http://www.gao.gov/assets/650/647791.pdf (concluding that risks cannot currently be quantified due to a lack of adequate scientific information).

11. For a discussion of some of the potential risks and state responses to those risks, *see* Hannah Wiseman, *Risk and Response in Fracturing Policy*, 83 U. COLO. L. REV. (2013). For a survey of the academic literature on fracking risks, *see* Spence, *supra* note 4.

12. *See, e.g.*, N.Y. ST. DEP'T OF ENVTL. CONSERVATION, *supra* note 7 (comprehensively examining risks).

13. This is a growing and diverse literature. For a summary, see Spence, *supra* note 4, at 442-47, 491-93.

existing understandings of existing contamination incidents,[14] many of the risks associated with fracking appear similar to those associated with a variety of other commonly accepted (but regulated) industrial activities. This is not to say that those risks are insignificant, particularly because unlike many other industrial risks, they occur—quite literally—in people's backyards. Compliance issues aside, when a well is being drilled and fracked, the production area is a hive of truck traffic, power generators, and other activities that can transform a quiet rural or suburban landscape into an industrial area. There are also important risks beyond backyards, including improper disposal of wastes in surface waters and injection wells, spills of drilling and fracturing materials, and local noise and road use impacts.[15] Thus, it is entirely logical for some people to oppose fracking in their backyards.[16] While many of the impacts of fracking appear to be temporary, it is little wonder some people do not want to endure them.

It is at this point, however, that the case against fracking goes off the rails. In their efforts to keep fracking out of their backyards, opponents of the practice have sought to convince policymakers to impose nationwide bans on fracking. A group called Americans Against Fracking has argued for a full fracking ban within the United States,[17] and other countries, such as France,[18] already prohibit the practice. The move to ban fracking has had more success at the local level[19] than at the state[20] or national[21] level. Although parties

14. *See* Wiseman, *supra* note 11 (describing some of the contamination incidents); Daniel J. Rozell & Sheldon J. Reaven, *Water Pollution Risk Associated with Natural Gas Extraction from the Marcellus Shale*, 32 RISK ANALYSIS 1382, 1384 (2011), http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2011.01757.x/pdf.

15. *See id.*

16. Coal mining sometimes occurs in people's backyards, but its footprint is too large to fit within individual farms, ranches or small towns. By contrast, gas development has a smaller footprint in that the construction and operation of individual wells requires much less space on the surface, making development technically possible in more places, and increasing the likelihood of human-energy conflicts. *See, e.g.*, *Applications and Permits*, CITY OF FORT WORTH, http://fortworthtexas.gov/gaswells/default.aspx?id=50608 (last visited Feb. 19, 2013) (showing 1,483 permitted wells within city limits and 526 additional permitted wells); Hannah Wiseman, *Urban Energy*, FORDHAM URB. L.J. (forthcoming 2013) (on file with author) (describing the likely expansion of conflicts).

17. The group's board features *Gasland* director Josh Fox, actor Mark Ruffalo, and singer Natalie Merchant. *See* AMERICANS AGAINST FRACKING, http://www.americansagainstfracking.org/members/ (last visited Feb. 13, 2013) (specifying both the group's goal of a nationwide ban, and listing members of its board).

18. *See* Tara Patel, *France to Keep Fracking Ban to Protect Environment, Sarkozy Says*, BLOOMBERG, Oct. 4, 2011, http://www.bloomberg.com/news/2011-10-04/france-to-press-ahead-with-shale-research-after-fracking-ban.html.

19. *See, e.g.*, De Avila, supra note 7 (mapping resolutions in New York to allow, ban, or temporarily disallow high-volume hydraulic fracking); John R. Nolon & Victoria Polidoro, *Hydrofracking: Disturbances Both Geological and Political: Who Decides?*, 44 URB. LAW. 507, 522-26 (2012) (describing some of the bans, and court responses to them, in detail); *City Council Proclamation*, CITY OF PITTSBURGH, Feb. 8, 2011, http://pittsburgh.legistar.com/LegislationDetail.aspx?ID=840339&GUID=CDAAC2F3-9BCA-4FEF-BF06-0E744C663D0D&Options=ID|Text|&Search=%22hydraulic+fracturing%22 (noting the 2010 ban on fracking in the City of Pittsburgh and commending the City of Buffalo, New York for its ban).

advocating for bans within particular municipalities or states in some cases have good reasons to be wary of drilling and fracturing[22] due to sensitive natural resources, areas with high tourism values, and other unique conditions, from a national perspective, there is a risk that these small pockets of opposition to a relatively clean fossil fuel could overshadow broader public opinion, which, at least in one recent study, seems to be generally positive toward natural gas production.[23]

What is missing from these legal and policy conflicts is any sense of the *relative* health, safety and environmental risks posed by fracking, and the opportunity costs of discouraging shale gas production on a national level.

20. The state of Vermont has banned fracking. *Vermont Fracking Ban: Green Mountain State Is First In U.S. To Restrict Gas Drilling Technique*, ASSOCIATED PRESS, May 16, 2012, http://www.huffingtonpost.com/2012/05/17/vermont-fracking-ban-first_n_1522098.html (describing the Vermont ban as largely symbolic, since Vermont has few shale gas resources). Vermont lacks shales and likely would not experience fracking, but may wish to make a statement about its risk concerns. New York has imposed a moratorium on certain kinds of hydraulic fracturing pending further study of the problem. New York's Department of Environmental Conservation has completed a comprehensive environmental impact statement, which the DEC concluded was required by that state's environmental quality act. *See* N.Y. STATE DEP'T OF ENVTL. CONSERVATION, *supra* note 7. The Department of Environmental Conservation proposed high-volume hydraulic fracturing rules near the end of 2012, with a comment period open through January 2013. N.Y. Dep't of Envtl. Conservation, High Volume Hydraulic Fracturing Proposed Regulations, 6 N.Y.C.R.R. 52, 190, 550-556, 560, 750, http://www.dec.ny.gov/regulations/77353.html. The rulemaking process has since been extended through a refilling of the rule, which the DEC initiated "in order to give New York State Commissioner of Health, Dr. Nirav Shah, time to complete his review" of the environmental impact statement. N.Y. Dep't of Envtl. Conservation, High-Volume Hydraulic Fracturing Proposed Regulations,, http://www.dec.ny.gov/regulations/77353.html. Bills have been introduced into the New Jersey and Maryland legislatures to impose moratoria on fracking there, though the governors of both states have already imposed moratoria pending further study. *See* Assembly Bill No. 3644, 215th Leg. (N.J. 2013), http://legiscan.com/NJ/text/A3644/id/678194 (text of the proposed New Jersey legislation); Tom Johnson, *Fracking Ban Doesn't Go Far Enough for Environmentalists*, NJSPOTLIGHT, February 4, 2013, http://www.njspotlight.com/stories/13/02/03/fracking-ban-doesn-t-go-far-enough-for-environmentalists (describing the New Jersey legislation and the governor's moratorium); Timothy B. Wheeler, *O'Malley Panel Urges 'Fracking' Safeguards*, BALT. SUN, Jan. 7, 2013, http://articles.baltimoresun.com/2013-01-07/features/bs-gr-fracking-legislation-20130107_1_severance-tax-sand-and-chemicals-shale-gas-extraction (describing the situation and Maryland); *Del. Shane Robinson and Sen. Karen Montgomery Introduce Statewide Ban on Fracking*, FOOD & WATER WATCH (Jan. 13, 2013), http://www.foodandwaterwatch.org/pressreleases/del-shane-robinson-and-sen-karen-montgomery-introduce-statewide-ban-on-fracking/ (describing the new bills introduced into the Maryland legislature).

21. The authors are unaware of any proposed congressional legislation banning fracking nationwide.

22. State bans on fracking reflect a precautionary approach in light of the unknown magnitude of risks. New York, for example, having seen the many impacts in neighboring Pennsylvania and possessing an unfiltered water supply above parts of the shale, is wary of development.

23. UNIV. TEX. AUSTIN ENERGY POLL, http://www.utenergypoll.com (last visited Feb. 19, 2013) (data on file with authors). Study results of course vary substantially. One study of 750 likely New York voters suggested that 42% support "the Department of Conservation allowing hydrofracking to move forward in parts of update New York," 36% oppose it, 15% do not have enough information. SIENA RESEARCH INST., OBAMA POISED TO CARRY NEW YORK, COMPARABLE TO '08 (2012), http://www.siena.edu/uploadedfiles/home/parents_and_community/community_page/sri/sny_poll/SNY%20october%202012%20Poll%20Release%20--%20final.pdf.

II. The Missing Piece

While natural gas is used directly by end users, one of its primary uses in the American economy is as a fuel source for electricity generation. Although gas-fired electric generation capacity has been growing, coal-fired power plants have always comprised the dominant part of the American electric generation mix—that is, *until* the last five years.[24]

Coal-fired and natural gas-fired power plants produce many of the same pollutants, but the gas-fired plants emit about half the carbon dioxide and small fractions of the most lethal pollutants (like sulfur dioxide, fine particles, and mercury) emitted by coal-fired plants on a per-BTU basis.[25] That is why regulators and environmentalists have tried for years to reduce emissions from coal-fired power plants. Indeed, the so-called "EPA war on coal" that featured in Republican campaign ads last year is really the culmination of decades of litigation and halting, tentative efforts to regulate the long understood environmental and health risks associated with coal combustion.[26]

Now, market forces are doing what regulation and lawsuits could not—closing down coal-fired power plants in significant numbers. The U.S. Energy Information Administration reported in the spring of 2012 that for the first time ever, gas-fired plants generated more electricity than coal-fired plants.[27] That same agency projects much faster growth in gas-fired capacity in the coming years, primarily because natural gas prices are expected to remain relatively low.[28]

The environmental and health benefits of this transition—and the environmental and health costs of the slowing or foregoing it—are likely to be enormous. A February 2011 study by health professionals concluded that our reliance on coal for energy causes tens of thousands of premature deaths per year, far more than any other energy source.[29] The authors estimated that these externalities cost the American public as much as half a trillion dollars each year, and "conservatively" estimated that if these costs were internalized (that

24. For a summary of these trends, see U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2012 (EARLY RELEASE), http://www.eia.gov/forecasts/aeo/er.

25. U.S. ENERGY INFO. ADMIN., NATURAL GAS ISSUES AND TRENDS (1998), http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/natural_gas_1998_issues_trends/pdf/it98.pdf.

26. For a summary of these rules, see JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RESEARCH SERV., R41914, EPA'S REGULATION OF COAL-FIRED POWER: IS A "TRAIN WRECK" COMING? (2011), http://www.fas.org/sgp/crs/misc/R41914.pdf.

27. U.S. ENERGY INFO. ADMIN., SHORT TERM ENERGY OUTLOOK DATA TABLES (2012), t http://www.eia.gov/forecasts/steo/data.cfm?type=figures.

28. See U.S. ENERGY INFO. ADMIN., supra note 24.

29. See Paul R. Epstein et al., *Full Cost Accounting for the Life Cycle of Coal*, 1219 ANNALS N.Y. ACAD. OF SCI. 73, 82-83 (2011) (assessing the negative externalities associated with coal production, including premature deaths). For a summary of other studies, see *External Costs of Coal*, SOURCEWATCH, http://www.sourcewatch.org/index.php?title=External_costs_of_coal (last modified Nov. 5, 2011).

is, borne by the industry), the price of electricity generated from coal would double or triple.[30] An August 2011 analysis by economists offered further support for the notion that substituting natural gas for coal in the electric generation mix would yield enormous health and environmental benefits—benefits that would greatly exceed the costs.[31]

To be sure, we are still learning about the full environmental impacts of fracking, and gas alone will not solve our climate problem. Indeed, some contend that natural gas poses a greater climate change risk than coal due to methane leakage during natural gas production[32]; others dispute that contention.[33] But methane leakage is a problem amenable to technical, regulatory solutions[34]; moreover, climate change impacts comprise only a small minority of the health and environmental costs of reliance on coal.[35] Thus, regardless of the methane leakage issue, there is no real support for the

30. *Id*. at 93.

31. Nicholas Z. Muller et al., *Environmental Accounting for Pollution in the United States Economy*, 101 AM. ECON. REV. 1649, 1664, 1667-69 (2011) (estimating environmental damages of $53 billion annually for coal combustion and less than $1 billion per year for natural gas-fired generation).

32. The scholarly debate on the methane leakage issue is just getting underway. One early study estimated that as much as 7.9 percent of the methane produced from natural gas wells escapes into the atmosphere as the result of leaks or venting, an amount that could undermine the climate change advantages of natural gas. *See* Robert W. Howarth, Renee Santoro & Anthony Ingraffea, *Methane and the Greenhouse Gas Footprint of Natural Gas from Shale Formations*, 106 CLIMATIC CHANGE, June 2011; *see also* Gabrielle Petron, et al., *Hydrocarbon Emissions Characterization in the Colorado Front Range-a Pilot Study, Forthcoming from the Journal of Geophysical Research*, 117 J. Geophys. Res. 1 (2012) (suggesting that existing estimates of fugitive methane emissions from gas operations are underestimates). Recently, the National Oceanic and Atmospheric Administration announced results from a study of methane emissions on Utah that are consistent with the Howarth data. Jeff Tollefson, *Methane Leaks Erode Green Credentials of Natural Gas*, NATURE, January 2, 2013, http://www.nature.com/news/methane-leaks-erode-green-credentials-of-natural-gas-1.12123.

33. A report from Cambridge Energy Research Associates contends that the Howarth study is plagued by measurement and methodological errors that resulted in an overestimate of methane emissions from gas production operations. The alleged errors include failing to distinguish between methane emission rates from venting versus flaring of gas, failing to account for the standard industry practice of capturing methane in flowback water, and more. IHS CAMBRIDGE ENERGY RESEARCH ASSOCS., MISMEASURING METHANE: ESTIMATING GREENHOUSE GAS EMISSIONS FROM UPSTREAM NATURAL GAS DEVELOPMENT (2011) (private report) (on file with author). *See also* David A. Kirchgessner et al.,, *Estimate of Methane Emissions from the U. S. Natural Gas Industry*, 35 CHEMOSPHERE, no. 6, 1997 at 1365; Michael Levi, *Yellow Flags on a New Methane Study*, COUNCIL FOREIGN REL., Feb. 13, 2012, http://blogs.cfr.org/levi/2012/02/13/yellow-flags-on-a-new-methane-study (identifying methodological problems with the Petron study).

34. *See* Jim Marson, *Elements: Shale Drilling Can Be a Win-Win*, AUSTIN AM.-STATESMAN, Jan. 13, 2013, http://www.statesman.com/news/news/opinion/elements-shale-drilling-can-be-a-win-win/nTyhF/ (detailing the Environmental Defense Fund's qualified support for shale gas production, with controls on methane leakage). States and the EPA are considering additional regulation to address methane leakage. Pennsylvania, for example, is moving to tighten methane leakage rules. Associated Press, *Pa. Moves to Limit Air Emissions from Gas Industry*, FUELFIX (Feb. 1, 2013), http://fuelfix.com/blog/2013/02/01/pa-moves-to-limit-air-emissions-from-gas-industry/ Several states would like the EPA to further tighten its rules, or implement them more quickly. *See* Kevin Begos, *NY, 6 Other States Suing EPA Over Drilling Methane*, STARGAZETTE, Dec. 11, 2012, http://www.stargazette.com/viewart/20121211/NEWS11/312110030/NY-6-other-states-suing-EPA-over-drilling-methane (recounting litigation aimed at forcing more action on methane leakage by EPA).

35. *See* Epstein et al., *supra* note 29, at 9 (ascribing most of the costs of coal to non-greenhouse gas emissions).

notion that fracking poses greater pollution or health risks than our reliance on coal for energy.[36] While we must regulate the risks of fracking, the effects of shale gas development and fracking do not appear to justify outright bans—particularly in light of the relatively unpleasant energy alternatives.

III. The Cost-Benefit-Influence Mismatch

So why the disconnect between the fracking policy debate and our understanding of the relative risks of fracking compared to other forms of electricity generation? As is often the case in policymaking,[37] the problem is the mismatch between the distribution of the costs and benefits (in this case—of fracking), on the one hand, and the distribution of political influence (votes), on the other.

In the debate over climate change policy, those who will bear the costs of limiting greenhouse gas emissions—representatives and customers of the energy industry—are much better represented in the American policymaking process than those who will benefit from greenhouse gas emissions limits—future generations of Americans and residents of foreign countries who are particularly vulnerable to future harms associated with climate change. There is a similar kind of missing voice in the fracking policy debate.

Just as many of those who will be harmed by coal's greenhouse gas emissions have no voice in the policy process, those unlucky enough to be killed by inhaling fine particles, mercury, or other byproducts of coal combustion cannot identify their killer. By contrast, those who must endure the risks associated with fracking know exactly where to point the finger. Consequently, they exert pressure on policymakers, skewing policy toward bans on fracking even at the cost of more (and far more harmful) emissions from coal-fired electricity generation.

This is a common phenomenon in the world of energy policy. It is perfectly logical to oppose the siting of high-voltage transmission lines across my property, or for the residents of Martha's Vineyard to oppose construction of the Cape Wind project off their shores.[38] Nevertheless, despite local

36. *See* Spence, *supra* note 3, for a survey of this literature. However, fugitive methane emissions are a problem that is amenable to technical solutions. *See* Oil and Natural Gas Sector: New Source Performance Standards and National Emissions Standards for Hazardous Air Pollutants Reviews, 76 Fed. Reg. 52738, 52757 (Aug. 23, 2011) (to be codified 40 C.F.R. pts. 60, 63).

37. *See, e.g.*, RANDALL BARTLETT, ECONOMIC FOUNDATIONS OF POLITICAL POWER 155 (1973) (providing a broad description of public choice theory, which suggests that those with the highest individual stakes in decision will win out over disparate groups of individuals who would, collectively, be highly impacted by a decision); Brian Galle & Kirk J. Starke, *Beyond Bail-outs: Federal Tools for Preventing State Budget Crises*, 87 IND. L.J. 599, 608 (2012) ("Politically, voters and officials may both anticipate that they will not be around when the future comes: they may die, they may move, or they may be voted or term-limited out of office, so that the future costs represent an intertemporal externality.")

38. Ten Taxpayer Citizens Grp. v. Cape Wind, 373 F.3d 183 (1st Cir. 2004).

opposition, both the transmission line and the wind farm may well provide positive net benefits for society as a whole.

These are the kinds of land-use conflicts that play out daily in the American policy process. Local, state and federal regulators must resolve these conflicts by weighing the costs and benefits of alternative courses of action. Presumably, in making these decisions, policymakers ought to consider *both* the concerns of those directly impacted by extraction in their backyards and the interests of the un- or under-represented people who will benefit from a transition from coal to natural gas. Indeed, states have begun to craft innovative solutions to ensure that communities that bear the disproportionate impacts of gas development receive resources necessary to address those impacts. Pennsylvania allows municipalities to impose a fee on unconventional, fractured gas wells, which supports long-term local development.[39] Colorado, in turn, has issued recommendations for state and local governments to work together to address local conflicts over gas extraction.[40] States are adapting their policy processes to try to reconcile the interests of those who experience the direct, immediate costs (and benefits) of fracking, and the large portions of the populace that would enjoy broad, future benefits from gas.

Conclusion

In the debate over fracking, it makes no sense for state or federal governments to ban fracking, given the opportunity costs of doing so, and environmental and other benefits it promises. Natural gas will not solve all of our climate woes and air pollution problems, but it is simultaneously affordable and environmentally superior to its leading competitor, coal. If properly extracted, and if used simultaneously with renewable resources, it can serve as a bridge to a more sustainable energy future. Burning this bridge through national or other widespread bans would be a mistake.

39. H.R. 1950, 2011 Leg. (Pa. 2011), http://www.ctbpls.com/www/PA/11R/PDF/PA11RHB01950CC1.pdf.

40. Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development, *Protocols Recommendations* (Apr. 18, 2012), http://dnr.state.co.us/taskforce/Documents/Task%20Force%20LGD%20Matrix%20%E2%80%93%20Final.pdf.